From: Eads, Cristina, EMNRD
To: Joel Lowry
Subject: RE: nRM2030230289 - Mewbourne"s Carlsbad Water Management System - Site Assessment Report and Proposed Remediation Workplan
Date: Wednesday, March 17, 2021 10:25:00 AM

Joel,

The OCD approves of the BLM's proposed variance of using compacted caliche to inhibit the vertical migration of chloride contaminants left in-situ.

Thank you,

Cristina Eads ● Environmental Specialist - A
Environmental Bureau
EMNRD - Oil Conservation Division
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From: Joel Lowry <joel@etechenv.com>
Sent: Wednesday, March 17, 2021 9:56 AM
To: Eads, Cristina, EMNRD <Cristina.Eads@state.nm.us>
Subject: [EXT] FW: nRM2030230289 - Mewbourne's Carlsbad Water Management System - Site Assessment Report and Proposed Remediation Workplan

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From: Joel Lowry
Sent: Monday, February 8, 2021 4:47 PM
To: Eads, Cristina, EMNRD <Cristina.Eads@state.nm.us>; Amos, James <jamos@blm.gov>
Subject: FW: nRM2030230289 - Mewbourne's Carlsbad Water Management System - Site Assessment Report and Proposed Remediation Workplan

Mr. Amos and Ms. Eads,

Please find attached the *Site Assessment Report and Proposed Remediation Workplan* that had been prepared for Mewbourne's Carlsbad Water Management System environmental remediation Site. Also attached is an information packet depicting the present excavation and the location of excavation confirmation soil samples and associated laboratory analytical data.

On November 9, 2020, upon receiving archaeological clearance, Etech conducted an initial release assessment at the Site. During the initial release assessment, a series of test trenches (TT-1 through TT-5) were advanced within the release margins in an effort to determine the vertical extent of chloride impacts. During the advancement of the test trenches, soil samples were collected on approximate 1 Ft increments and field screened for concentrations of chloride. The test trenches were advanced until chloride field test results suggested concentrations of chloride were below 600 mg/kg. Select soil samples were submitted to the laboratory for analysis of chloride. Laboratory analytical results indicated soil was not impacted above 440 mg/kg beyond 11 ft. bgs in the area characterized by test trench TT1, 160 mg/kg beyond 6 ft. bgs in the area characterized by test trench TT2, the laboratory method detection limit beyond 6 ft. bgs in the area characterized by test trench TT3, 200 mg/kg beyond 7 ft. bgs in the area characterized by test trench TT4 and 230 mg/kg beyond 3 ft. bgs in the area characterized by test trench TT5.

Upon conducting the initial release assessment, excavation activities commenced at the Release Site. Impacted soil affected above the NMOCD/BLM Reclamation Standard present within the uppermost 4 Ft. was excavated and transported to an NMOCD-permitted surface waste facility. Excavation sidewalls were advanced until laboratory analytical results indicated chloride concentrations were below the NMOCD Reclamation Standard.

On December 14, 2020, a *Site Assessment Report and Proposed Remediation Workplan,* was submitted to the NMOCD and BLM proposing remediation activities designed to advance the Site toward an approved closure. At the time of preparation, Etech's copies of the available BLM shapefiles suggested the Site was located in an area described as having medium karst potential, considered by some to be unstable. The *Site Assessment Report and Proposed Remediation Workplan,* utilized in-situ chloride contaminant migration models and the *presence of fresh water wells in the vicinity supporting background chloride concentrations of 356 and 340 mg/L* to justify excavation of impacted soil affected above the 10,000 mg/kg present within the release margin.

Due to the size and sensitive nature of the release, upon submitted the *Site Assessment Report and Proposed Remediation Workplan* via the online payment portal, copies were submitted to the BLM and NMOCD for timely consideration. In subsequent conversations between representatives of Etech, the BLM and the NMOCD the *Site Assessment Report and Proposed Remediation* was approved with the condition that a 2-3 Ft. layer of compacted caliche be installed in the base of the excavated area in an effort to mitigate the vertical migration of chloride contaminants left in-situ.

Between November 10, 2020 and January 21, 2021, approximately 21,000 cubic yards of impacted soil has been excavated and transported to an NMOCD-permitted surface waste facility. During the course of remediation activities, 224 excavation confirmation soil samples were collected from the floor of the approximately 90,000 sq. ft. excavation. Laboratory analytical results from excavation confirmation soil samples collected from the floor and sidewalls of the excavated area indicated BTEX and TPH concentrations were below the laboratory method detection limit in each of the analyzed soil sample. Analytical results from excavation confirmation soil samples collected from the sidewalls of the excavated area indicated chloride concentrations were below the NMOCD Reclamation Standard in each of the submitted soil sample. Analytical results from excavation confirmation soil samples collected from the floor of the excavated area indicate the maximum chloride concentration remaining in-situ is 9,000 mg/kg (FL-79 @ 4') and the average chloride concentration is 2,260 mg/kg. Upon receiving verbal approval from both agencies, backfill activities commenced at the Site.

On February 4, 2020, Etech received notification that NMOCD had conducted their formal review of the *Site Assessment Report and Proposed Remediation Workplan* via the online portal and that the workplan was approved with the condition that 600 mg/kg be utilized as the chloride closure criteria on the basis of the Site being located in an unstable area, or with high karst potential. This prompted Etech to check the GIS shapefiles that they had been utilizing. Further review suggests karst designation in the vicinity of the release changed sometime between when the release occurred and the *Site Assessment Report and Proposed Remediation Workplan,* presumably on January 14, 2021, when the shapefile in the zip file on the CFO website was created; all inquiries with industry peers resulted in their current use of the same Karst Shapefile as myself.

Upon receiving NMOCD and BLM approval, Etech proposes to move forward with the original *Site Assessment Report and Proposed Remediation Workplan* and subsequent BLM conditions of approval. The BLM's condition of approval of using compacted caliche would be the proposed variance, or engineering control, designed to inhibit the vertical migration of chloride contaminants left in-situ. The final report will take the shape of a *Remediation Summary and Variance Request* referencing information within the *Site Assessment Report and Proposed Remediation Workplan* and detailing field activities and laboratory analytical results from excavation confirmation soil samples.

Mr. Amos,

If you are still in agreement with the approach might you respond to this email as such?

Ms. Eads,

With Jim's approval might we resume remediation activities and prepare *a Remediation Summary and Variance Request* for consideration at completion?

I apologize for the oversight and inconveniences. Had we known that the area may be considered as having a high potential for karst we would have undoubtedly taken a different route and not started backfilling the excavation on verbal agreements. If you have any questions or need any additional information, please feel free to contact me by phone or email. Thanks.

Joel W. Lowry

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From: Joel Lowry
Sent: Thursday, December 31, 2020 9:19 AM
To: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>
Subject: Holiday? + Quick Call - FW: nRM2030230289 - Mewbourne's Carlsbad Water Management System - Site Assessment Report and Proposed Remediation Workplan

Mike,

I wanted to shoot out an email to see if you were on Vacation this week and if not if you had a quick second to discuss this project. I spoke to Mr. Amos the other day and he was on board. He had requested that during backfilling activities that we do 3 Ft. of compacted fill in lieu of any poly liners. With this, he has just moved away from holding the Medium Karst as Unstable, allowing us to move forward with a 10,000 ppm closure, something the NMOCD may had been on board with all along. It was/is kind of a weird project. Seems the primary approval we needed was from the BLM and we could have safetly moved forward “at risk” as it concerns the NMOCD. If you are on vacation, please don’t bother. We got an arch survey and a prompt initial response, excavating everything affected above the NMOCD Reclamation Standard present within the uppermost 4 Ft. I bet they are getting close to having moved 15,000 cy by now. We do have an opportunity to advance the floor of the excavation in a couple hot spots to less than 10,000 and begin backfilling the southern portion of the Site to limit our overall footprint and make efficient use of the trucks and mechanical equipment. Again, f you are on vacation please pay it no mind. Otherwise I hope that you have enjoyed your Holidays and I look forward to working with you again next year!

Respectfully,

Joel Lowry

From: Joel Lowry
Sent: Friday, December 18, 2020 3:45 PM
To: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; 'jamos@blm.gov' <jamos@blm.gov>
Subject: FW: nRM2030230289 - Mewbourne's Carlsbad Water Management System - Site Assessment Report and Proposed Remediation Workplan

Mr. Bratcher and Mr. Amos,

Please find attached a *Site Assessment Report and Proposed Remediation Workplan* that has been prepared for Mewbourne's Carlsbad Water Management System reportable release site. On October 19, 2020, a release was discovered on the Carlsbad Water Management System 12-inch poly line. The release was attributed to the failure of a pup joint on the pipeline riser. The initial C-141 indicates that approximately 150 bbls of produced water were released with approximately 20 bbls having been recovered. The release was inferred to have affected an area of ROW and adjacent pasture measuring approximately 85,000 sq. ft. The release site is located in Unit Letters F &K, Section 35, Township 23 South, Range 27 East in Eddy County, New Mexico.

Upon discovering the release and gaining the necessary archeological clearance, remediation activities commenced. Impacted soil affected above the NMOCD Reclamation Standard present within the uppermost 4 Ft. was excavated and transported to an NMOCD-approved disposal facility.

On December 14, 2020, the attached *Site Assessment Report and Proposed Remediation Workplan* was submitted through the NMOCD Online Payment Portal; the release was assigned incident number nRM2030230289.

The release site is in an area identified as Medium Karst (pg 15). The nearest well with depth to groundwater information is an NMOSE well C-03031 located approximately 2,100 Ft southeast of the Site. The driller and completions log indicates water bearing strata was encountered at 139 to 150 Ft bgs. The well was screened from 90 to 150 Ft bgs and had a static water level of 67 Ft. bgs as measured in 2004, which could suggest Artesian (pgs 15, 87, 88). The next closest water well with available information is USGS well located approximate 0.8 Mi north of the Site. The well was completed within alluvium/bolson deposits and exhibited a static water level of 110.98 Ft as measure in 1988 (pg 89). The Site Assessment Report and Proposed Remediation Workplan indicates that the probable depth to groundwater at the Site is approximately 95 Ft. bgs; 90 Ft. bgs was utilized in the chloride migration models within the attached Workplan.

Due to the Site's location and the potential need for chloride migration modeling to develop a proposed remediation strategy a review of available groundwater chemistry data was conducted. The nearest USGS well (32134010409000) with available groundwater chemistry data is located 2.3 Mi south-southeast of the Site. The well is said to have been completed in the Capitan Limestone and exhibited a chloride concentration of 340 mg/L (pgs 95-97). An additional groundwater sample was collected from a public water supply well approximate 1.8 Mi north of the Site. Laboratory analytical results indicates the groundwater sample exhibited a chloride concentration of 356 mg/L and a TDS concentration of 2,050 mg/L (pgs 95, 98-101) . The driller and completions log indicates water bearing strata was encountered at 210 to 220 Ft bgs. The well was screened from 160 to 220 Ft bgs and had a static water level of 98 Ft. bgs as measured in 2006, which could suggest Artesian. For the purposes of chloride migration models 350 mg/L was utilized as the background chloride concentration within the aquifer (pg 103).

This is one of the more interesting projects that I have worked on lately. Depth to groundwater is established as being over 50 Ft. bgs. No shallow water bearing zones were identified in the drilling logs for PWS Well #5 or C-03031, which suggests that the first zone of usable freshwater is located at depths ranging from 90 to 220 Ft bgs, which exhibited an average chloride concentration of 348 mg/L.

The Site is located in medium karst which can be considered an unstable area *[sic]*. Laboratory analytical data from soil samples collected from the five (5) vertical test trenches indicates chloride concentrations decline to 440 mg/kg at 11 Ft. bgs in the area characterized by TT1, 160 mg/kg at 6 Ft. bgs in the area characterized by TT2, Non-Detect at 6 Ft. bgs in the area characterized by TT3, Non-Detect at 7 Ft. bgs in the area characterized by TT4 and Non-Detect at 3 Ft. bgs in the area characterized by TT5.

Review of available data suggests that the need for a Variance Request may not be necessary, rather we would need BLM's approval of the attached Workplan, or their permission to utilize Tier II clean-up standards, as opposed to the 600 mg/kg for unstable areas at depths greater than 4 Ft. bgs. Gaining approval from the BLM of the attached Workplan, or them allowing us to proceed as though the Site is not located in an unstable area might limit the chances of the Workplan being denied, the

need for a Variance Request and/or the potential need for poly liner(s).

We had a very prompt initial response and approximately 11,000 cy of impacted soil affected above the NMOCD Reclamation Standard has already been excavated and transported to the disposal facility. Due to the size of the release, and in an effort to maintain efficiency and limit the amount of surface disturbance, it would be advantageous for us begin backfilling the southern portion of the release Site. Please review the attached *Workplan* at your convenience. If you have any questions or need any additional information, please feel free to contact me by phone or email. Thanks.

Respectfully,

Joel Lowry